How "Standard" Are Parents' Lives when they Work Nonstandard Hours? The Daily Rhythms of Work and Family in a 24-Hour Economy

Vanessa R. Wight

Sara B. Raley

Suzanne M. Bianchi

Department of Sociology

University of Maryland, College Park

This paper is prepared for the 2006 annual meeting of the Population Association of America in Los Angeles, CA. Please direct all correspondence to: Vanessa R. Wight, Department of Sociology, Maryland Population Research Center, University of Maryland, 1103 Art/Sociology Building, College Park, MD 20742, vwight@socy.umd.edu.

Abstract

Using data from the recently released 2003 and 2004 American Time Use Surveys (ATUS), we examine the scheduling of work and its relationship to parents' time spent in family-related, leisure, and personal care activities. Using a sample of work days across the year, this paper provides a new measurement perspective on nonstandard work and also informs the discussion of the "costs" and "benefits" of differing parental work schedules. The results suggest that, with few exceptions, parents who work nonstandard hours on their diary day spend similar amounts of time with children when compared to parents who work standard hours on their diary day. Fathers who work nonstandard hours spend upwards of 30 minutes more time as the sole parent of their children than fathers who work standard work hours. Further, married parents who work nonstandard hours spend less time with a spouse and all parents with a nonstandard workday diary get less sleep and watch fewer minutes of television per day than parents with a standard workday diary.

Introduction

Both the length of the workday and the scheduling of hours worked have important implications for managing work and family (Kanter, 1977). Most of the research in this area has focused on *who* engages in paid employment and *how many* hours are worked. Over the last 30 years, a proliferation of research articles document the increase in women's employment, particularly maternal employment, and the rise in dual-earning couples, and explore the consequences of these trends for family health and well-being. Several recently published books, such as *The Time Divide: Work, Family, and Gender Inequality* (Jacobs & Gerson, 2004), *It's about Time: Couples and Careers* (Moen, 2003), and *Fighting for Time: Shifting Boundaries of Work and Social Life* (Epstein & Kalleberg, 2004), assess trends in time spent at work, the increase in couples' joint hours, and the consequences of these changes for families. In addition, shifts in the economy have expanded the range of work hours available to workers. For example, *Working in a 24/7 Economy* (Presser, 2003) highlights the increasing trend toward nonstandard work schedules and shows that work is spreading over the 24-hour day and across the seven-day week. These findings underscore the importance of the timing of paid work hours, suggesting that *which hours* people work is important to our understanding of the interweave of work and family life.

The availability of large nationally representative datasets with detailed information on employment patterns, like the Current Population Survey (CPS) (and its various supplements), have allowed researchers to document the employment arrangements and demographic characteristics of various populations of workers, such as those who work nonstandard hours (see Presser's work (1995; 2003; 2004) and see also the full October 1996 and March 2001 volumes of the *Monthly Labor Review*). The diffusion of work hours outside a "standard" weekday,

workday that ranges from 8:00 a.m. to 4:00 p.m. has implications for how time is allocated outside of the workplace—time typically spent in family activities, leisure pursuits, and/or time spent on oneself. The increased heterogeneity of employment hours (too many for some and too few for others) as well as the increase in nonstandard work schedules raises questions about how workers, particularly workers with children, are affected (Jacobs & Gerson, 2004; Rones, 1997; Tausig & Fenwick, 2001).

The current paper expands what we know about the lives of a growing segment of the U.S. economy—parents with nonstandard work days—by assessing the relation of nonstandard work hours to time spent with family and time spent on oneself in leisure and personal care activities like sleep. These dimensions of workers' lives have received relatively little attention largely due to data constraints. Release of the American Time Use Survey (ATUS) provides us with a large representative sample of working days on which we know not only the total daily hours worked, but *when* these hours were worked, what activities filled nonwork time, and who was with the worker during these nonwork hours.

Literature Review

Presser's (2003) work provides a rich description of both the prevalence of nonstandard work and the characteristics associated with this type of work. In order to better understand the pervasiveness of nonstandard work, most research in this area has used a measure based on when people work *most* of their hours. Thus, a standard daytime schedule is defined as one where at least half of the hours worked fall between 8:00 a.m. and 4:00 p.m. An evening schedule is defined as one where at least half of the hours worked fall between 4:00 p.m. and midnight. And finally, a night schedule is defined as one where at least half of the hours worked fall between

midnight and 8:00 a.m. (Hedges & Sekscenski, 1979; Presser, 2003). When the work hours of individuals are considered (i.e., how many relative to when they are worked), approximately one-fifth of employed Americans work sometime other than a standard daytime schedule. (Presser, 2003). That is, one-fifth of employed Americans either work most of their hours *outside* the 8:00 a.m. to 4:00 p.m. standard daytime hours, work a rotating schedule, or report that their hours vary.[1]

Presser (2003) finds that men are more likely than women to work other than a standard daytime schedule. Nonstandard schedules are also more prevalent among young workers, part-timers, those who are not married, and non-Hispanic blacks, but only in the case of women. Parenthood is differentially associated with the likelihood of working a nonstandard schedule for mothers and fathers. Whereas the presence of a preschooler or a young child aged 5–13 is associated with a decreased likelihood of working during a nonday shift for mothers, the opposite is true for fathers. The odds of working nonstandard hours for fathers are greater when young children are at home. These findings, based on the 1997 CPS are consistent with past research on shiftwork (Beers, 2000; Presser, 1995; Presser & Cox, 1997) and with findings from other nationally representative data sources (Han, 2002; Presser, 1986, 1988; Presser & Altman, 2002).

What is less well known is how nonstandard work hours affect time engaged in other activities. Kanter (1977) argued nearly 30 years ago that work spills over into family life, constraining the time available for other activities. Furthermore, *which hours are worked* not

[1]We are not able to identify from a single diary day whether a person works a rotating schedule or whether their hours vary. Therefore, we focus on the variation in time use across types of fixed schedules that can be delineated in the ATUS (i.e., day, evening, or night).

only affects how much time one has for certain activities, but it also constrains *when* those "other" activities can take place. In addition, which hours are worked determines when family members can be together. The ability to create ongoing family routines may be hampered by work schedules (Roy, Tubbs, & Burton, 2004), and this may have negative implications for family well being and child development (Fiese et al., 2002).

Our interest is in the association between nonstandard work hours and time in activities related to family functioning such as time with children and one's spouse and personal time with restorative qualities such as sleep and exercise. It is this time that is closely linked to the health and well being of not only workers, but also their families.

Time with Children

One of the main issues with parents who work nonstandard schedules (hours outside of the conventional 8 a.m. to 4:00 p.m. weekday workday) is that they are generally working at times when others (e.g., children, spouses, friends) are not. Some parents may schedule their childcare time to fit around their work schedules (Craig, 2005). Using data from Australia, for example, Craig (2005) finds that employed mothers may protect time with children by scheduling childcare activities earlier in the morning and later in the evening, presumably around their work schedules. However, work schedules may also be a way that parents fit work around caring for children. For example, some parents may arrange "tag-team" schedules, where parents work nonoverlapping schedules in order to provide full childcare coverage for their children rather than placing them in nonparental care (Han, 2004; Presser, 1988). Other parents who work nonstandard schedules may be compelled to do large amounts of childcare, whether it is their preference or not, simply because of the difficulty in finding and paying for childcare services at

nonstandard hours (Presser, 2004). Hence, parental care of children may be maximized and more equitably distributed across both parents when one or both parents work nonstandard schedules. Indeed, Presser's (1988) work suggests that dual-earner couples with a spouse who works a fixed nonstandard shift are the most likely to participate jointly in childcare when compared to other dual-earner couples. Further, the more divergent the couples' shifts, the more childcare fathers tend to do (Paley, 2005; Presser, 1988).

In addition to the ability to "tag team," nonstandard work hours may be particularly helpful in covering children's "high risk" periods, such as after-school hours between 3:00 and 6:00 p.m. or during school closings and vacations. Research indicates that the highest rates of juvenile offending occur between the hours of 3:00 p.m. and 8:00 p.m. (Fox, 1996; Heymann, 2000b; Snyder & Sickmund, 1999) and teenagers are most likely to engage in sexual intercourse between 3:00 p.m. and 6:00 p.m. (Cohen, Farley, Taylor, Martin, & Schuster, 2002). Parental supervision and attention during these "high risk" periods decreases the chances of delinquent behavior among youth (Richardson, Radziszewska, Dent, & Flay, 1993).

Working outside standard daytime hours means that parents' work may overlap with some of children's "available" time, such as their time after school but before bed. Parents who work evenings, for example, may be less available to read to children at bedtime or participate in children's educational development both at home and at school. Parents who work evenings or nights report difficulty participating in their children's educational activities (i.e., attending school meetings, trips, or events, or assisting with homework) (Heymann, 2000a). Furthermore, mothers who work rotating shifts are less likely to report helping with homework, while fathers who work nights more often help with homework than other fathers (Presser, 2003).

Finally, nonstandard work schedules may also interfere with the time family members spend together, including eating. While eating is a biological imperative, qualitative research underscores the social nature of eating and its daily occurrence as an important component of family functioning (DeVault, 1991). Previous research has found a strong association between work schedules and parents' presence at meals with their children. Presser (2003) notes that the type of shift affects workers' availability for dinner or breakfast. Evening workers are significantly less likely than those with standard daytime work hours to eat dinner with their children. However, unlike standard day shift workers, evening shift workers are typically available in the mornings for breakfast, as they do not have to leave during the breakfast hour to go to work. Working a night shift seems to conflict more with eating breakfast than working an evening shift, which may reflect these workers' need for sleep in the morning hours.

We expect to see large differences in time spent *with* children (i.e., doing any activity with a child is present), particularly when it comes to spending time alone with children. Parents who work nonstandard hours should, theoretically, be more available to children throughout the day than their standard counterparts. Therefore, we expect parents with a nonstandard workday diary to have more exposure to spending time with children than their standard counterparts, whose bulk of time with children involves when both they and their children are sleeping.

However, parents working nonstandard work hours may be more able to provide certain kinds of routine care such as taking children to medical appointments in the afternoons, but less available for "bath time" in the evenings. Similarly, parents who work nonstandard work hours may be less available in the evenings for interactive, engaged childcare such as reading and helping with homework, but more available in the afternoons to play with children.

Parents with school-aged children may face their own set of constraints as they negotiate time with children under the rigidity of their children's school schedules. Therefore, we expect parents who work nonstandard hours and have children in school to face difficulties negotiating specific school activities such as PTA meetings, school recitals, and help with homework as many of these activities take place in the evenings when parents with daytime work schedules are done with work. However, we expect parents who work nonstandard work hours to be more available during the 3:00 p.m. to 6:00 p.m. high-risk period for children.

We are unable to assess the different effect of nonstandard work by the type of shift due to small sample sizes. Yet our general expectation is that parents with nonstandard work hours on their diary day are more likely to be working during the dinner hours but less likely to be working during the breakfast hours than their counterparts with more standard work hours and they will thus spend less time eating dinner but more time eating breakfast with their children.

Time with Spouse

Presser's (1988) work indicates that parents with young children often work alternating shifts as a way to provide continued parental care of children. "Tag-team" schedules may allow parents to provide full parental childcare coverage for their children across the 24-hour period, but they may also leave little time for parents to spend with each other either with or without children. This may partly explain why nonstandard work schedules are associated with poorer marital quality and more martial disruption (Crouter, Bumpus, Head, & McHale, 2001; Presser, 2000; White & Keith, 1990).

Indeed Perry-Jenkins and her colleagues followed a sample of same- and alternating-shift couples for a year and found that couples who worked nonoverlapping schedules suffered

declines in marital love (Perry-Jenkins, Goldberg, Pierce, & Haley, under review). Similarly, White and Keith (1990) found that shift work negatively affected marital happiness and increased the likelihood of divorce. Some of the loss in marital love may be related to the erosion of time spouses spend together. For example, shift work is negatively associated with the amount of time spent together or engaged in family activities (Blair, 1993; Staines & Pleck, 1983). Qualitative research reveals a similar pattern between shift work and marital quality. Couples working nonoverlapping work shifts report that when they are both at home, it is typically during a brief period when one spouse is returning from work as the other is preparing to leave—hardly a period of time conducive to quality interaction (Deutsch, 1999; Rubin, 1994).

Preliminary results from the American Time Use Survey on all workers, regardless of parental status, indicate that work during a nonday shift is associated with a significant reduction in time with a spouse (Polivka, 2005). We expect to find similar results when we restrict the sample to parents, given that parents are arguably the most "time pressed." The time parents spend with each other is constrained not only by their work commitments but also by their commitment to providing care for their children.

Time for Oneself: Personal Care and Discretionary Time

One of the concerns about working nonstandard hours is that these work hours may erode what we typically think of as "down" time, or time when people unwind, relax, and spend time alone or with their families. For those working standard hours, "down" time tends to occur within the confines of nights and weekends. For those who are employed during nonstandard hours, however, down time occurs when other adults are working or sleeping or when children are in school.

Furthermore, the social rhythms of everyday life still largely adhere to a daytime schedule. For example, most businesses and government services still hold standard daytime hours. As some have noted, there are parts of the day that have a fixed social value (Hamermesh, 1999). Thus, nonstandard work schedules may hamper a worker's ability to sync their routine activities, such as sleep, to appropriate "culturally sanctioned" times (Brown, 1975). Yet the trend toward an economy that never sleeps (Presser, 2004), suggests that services, particularly food services, such as dining and grocery shopping, and recreational services, such as private fitness facilities, may be in the process of expanding beyond the traditional business hours. Indeed the increased availability of 24-hour fast-food venues, "singles' night" at the local Safeway, and later hours at the local gym are all suggestive of an extension of time periods in which to engage in nonwork activities.

Some nonwork activities, like sleep or exercise, may be more central to parents' health and well-being than others. Time-use studies on sleep indicate that among both women and men, paid work is the activity most strongly (and negatively) associated with sleep, whereas most other activities have either no or a weak relation with time spent sleeping (Dinges, 2005). Biomedical and behavior research emphasizes the importance of sleep for optimal cognitive functioning (Durmer & Dinges, 2005), and evening and night shift workers tend to have less and lower quality sleep than fixed daytime workers (Wedderburn, 2001). Shiftworkers are more likely to be interrupted from sleep and to have disrupted circadian rhythms (i.e. regular changes in one's mental and physical characteristics governed by one's biological clock), which is linked to negative health consequences. Because shiftworkers' time available to sleep typically overlaps when family members are awake, sleep may be perceived as a "flexible commodity" that is traded for time in activities deemed to be more important (Dinges, 2005, p. 4).

We expect nonstandard work to be associated with losses in restorative time—particularly among parents who are arguably the most time pressed as they have both their own and their children's daily schedules to manage. While theoretically they have all afternoon to engage in free-time activities or sleep, the rigidity of children's daily schedules, both pre- and school-aged children, constrains parents' time as the responsibility for children is immediate and typically cannot be traded for personal care or leisure pursuits.

The Present Study

In order to better understand how nonstandard employment intersects with family life, we use time-diary data from the American Time Use Survey (ATUS) to provide a fresh perspective on nonstandard work—contributing to the discussion of the "costs" and "benefits" of differing work schedules with insights unique to the time diary data collection. Our interest is in two broad areas. Does nonstandard work affect time spent with significant others—one's children and one's spouse? Secondly, is nonstandard work associated with individual behaviors that might affect health and well being—sleep, exercise, and relaxation?

Specifically, we ask, is time with children maximized when a parent works nonstandard work hours on their diary day and do fathers who work nonstandard hours carve out more time for children than fathers with conventional workday diaries, as Presser's (1988) work suggests? How are certain types of engagement activities with children, which are highlighted in the literature as important for development (e.g., reading to children, helping children with homework, teaching children), associated with the scheduling of parents' work? Are parents of school-aged children more likely to be at home and available to their children during the "critical" 3:00 p.m. to 6:00 p.m. time frame if they work nonstandard hours? To what extent does

work outside the conventional 8:00 a.m. to 4:00 p.m. daytime hours erode leisure and time with a spouse? How do a parent's sleep and leisure activities differ by whether work hours are nonstandard or not? Do we find evidence that these activities are short changed because nonstandard workers still try to conform to the daily rhythms of standard workers' lives? Further, is time with family members, sleep, and leisure different for mothers and fathers with nonstandard workday diaries?

Data and Measurement

We combine data from the 2003 and 2004 American Time Use Surveys (ATUS) in order to examine the characteristics associated with nonstandard work and how this type of work is related to other patterns of time use. The ATUS, which is sponsored by the Bureau of Labor Statistics and conducted by the U.S. Census Bureau, is the first federally administered survey on time use in the United States. Data collection for the ATUS began in January 2003. The sample of ATUS respondents was derived from randomly selected individuals age 15 or older who were from a subset of households completing their eighth and final month of the Current Population Survey (CPS). Using computer assisted telephone interviews, ATUS respondents were interviewed one time and asked to provide a detailed account of what they were doing between 4:00 a.m. the previous day and 4:00 a.m. the interview day. For each activity reported, the respondent was asked how long the activity took place, where they were, and who was with them. Approximately 21,000 individuals were interviewed in 2003 and approximately 14,000 individuals were interviewed in 2004. The response rate for both years was 57 percent. In order to ensure reliable measures across the seven days of the week, ATUS samples are split evenly between weekdays and weekends. Thus, about 10 percent of the sample is allocated to each

weekday and 25 percent is allocated to each of the weekend days. Application of the ATUS final weight compensates for the unequal distribution of days across the week.

The diary format of the ATUS makes it particularly well suited for examining the scheduling of work hours within the daily rhythms of family life because it captures detailed estimates of time spent in *both* market as well as nonmarket work (e.g., childcare, housework, leisure, sleep) on the diary day. Because the ATUS is comprised of a subset of CPS participants, the data also include extensive information on the labor force characteristics of households, usual hours worked, earnings, and weeks employed over the year. The large sample size available with the ATUS provides us the opportunity to look more closely at the scheduling of work and family time across key demographic characteristics of parents and children (e.g., parents' educational attainment, marital status, race, family income, and age of children). In short, these data provide a daily snapshot of how parents structure and schedule their time, allowing us to examine how the scheduling of work is correlated with various dimensions of family life.

Time diary estimates offer an advantage over the more typical survey reports of time expenditures. The methodology forces respondents to adhere to the 24-hour constraint of a day. Survey estimates used to approximate time-use patterns often suffer chronic overestimation of actual behavior—largely related to the reporting burden associated with recalling routine tasks over extended periods of time (Robinson & Bostrom, 1994; Robinson & Gershuny, 1994). That is, time-use questions embedded in larger surveys require respondents to provide on-the-spot answers in a short period of time to questions regarding usual behavior within the last week. (For a detailed discussion of variation in time use estimates see Marini and Shelton (1993), Robinson and Godbey (1997), and Bianchi et al. (2006).)

Our analysis is restricted to employed parents aged 18–64 with at least one child under age 18 in the household, who were sampled on a weekday, and who did some paid work on their diary day. The total sample size is 4,081 parents—2,027 mothers and 2,054 fathers.

Measures

Nonstandard Work Hours

The ATUS data is comprised of one time diary per respondent. Thus, we have only one day of activities for each individual in our sample. We do not know whether the respondent's work hours on the diary day are typical of their usual work schedule but we do have a representative sample of work days across the population of parents.

In order to classify parents as working nonstandard work hours on their diary day, we use the distinctive structure of the diary to construct a person-minute file that indicates what each respondent is doing for each of the 1,440 minutes in the day. Such a file structure provides us with the flexibility to select intervals of time during a respondent's diary day (e.g., an interval of time that approximates the standard weekday workday from 8:00 a.m. to 4:00 p.m.) in order to assess 1) whether the respondent does any paid work during that time; 2) how much time during the interval the respondent engages in paid work; and 3) what percentage of the respondent's total paid work time occurs during the interval. We can distinguish workers who do not work at all during a standard 8:00 a.m. to 4:00 p.m. window from those who do. Among those who work during the interval, we are able to discern whether respondents work at least half of their total work hours during the interval. In using the 8:00 a.m. to 4:00 p.m. time period, we use the same criteria used in past research to classify respondents with a nonstandard workday diary. Our analysis of the 1,440 minutes of the day, a complex and unique analytical approach which has

been used rarely (see Nock and Kingston, 1988), allows us to analyze not only the total number of hours parents work on the diary day, but *when* those hours are scheduled across the 24-hour day.

Parents are classified as working nonstandard hours on their diary day if at least half of their total work hours fell between 4:00 p.m. and midnight (evening shift) or between midnight and 8:00 a.m. (night shift) and thus outside a standard 8:00 a.m. to 4:00 p.m. day shift. Although Presser's (2003) work also considers the schedules of people who work rotating shifts or report that their hours vary, we focus on the variation across the three fixed shifts (i.e., day, evening, and night) as we are not able to identify from a single diary day whether the person works a rotating schedule or whether their hours vary. If the total amount of time respondents worked was distributed equally across two shifts, we assigned them to the earlier work shift. There were seven respondents whose work hours fell equally across at least two different shifts. Due to small sample sizes (only 13 percent of mother's and 14 percent of father's work hours were nonstandard), respondents who worked evening or night hours were classified as having a nonstandard workday diary.[2] Thus, the measure of "nonstandard workers" is a dichotomous variable where one includes respondents who worked most of their hours on their diary day outside 8:00 a.m. and 4:00 p.m. and a zero is assigned to respondents who worked most of their hours inside this interval.

[2] Presser (2003) notes that the characteristics associated with night and evening shifts differ and, therefore, workers' time involved in other activities may vary by whether their shifts are evening or night. However, small sample sizes do not allow us to consider the time use patterns of evening and night shift workers separately.

Measures of Time with Children, Time with a Spouse, and Time for Oneself

We use a number of time-use measures to estimate time with children, time with a spouse, and time for oneself.

Time with Children

The ATUS provides considerable detail on parent-child time. For example, we are able to look at overall primary childcare time, or time when the respondent reports doing childcare as their primary activity on the diary day, detailed measures of specific types of primary childcare time, and time that the respondents report being with a child (this measure exploits both the primary activity data and "with whom" data).

Any time with children is a measure of the total minutes per day parents report doing *any activity* in which a child was present. It is the broadest measure of child time available in the ATUS and allows us to assess the general relationship between nonstandard work and time with children. We also estimate *any time alone with children*, a time when parents are solely attending to their children without the assistance of other caregivers (most notably, the other parent).

Primary childcare time is the total number of minutes per day that respondents report engaging in physical care, helping and teaching, talking and reading, playing, providing medical care, and other childcare time such as dropping off, waiting, and picking up children. We also use a measure of *routine* and *engaged* childcare to distinguish basic childcare time from more interactive time with children. Routine time is the total number of minutes per day parents report providing physical or medical care, travel-related childcare, or other childcare tasks. Engaged childcare time is the total number of minutes per day parents report helping and teaching, talking

and reading, and playing with children. The rich detail in daily activities available in the ATUS also allows us to look directly at *reading to/with children*, a measure of interactive childcare that has been singled out as an important activity that improves children's cognitive functioning (Davis-Kean, 2005). Thus, we include a continuous measure of minutes per day that parents read to or with their child.

We also estimate a measure of time that parents spend eating with their child. *Eating breakfast* is constructed by summing the total number of minutes between 6:00 a.m. and 9:00 a.m. parents report eating with a child. Similarly, *eating dinner* is restricted to parents' reports of eating with a child between 5:00 p.m. and 8:00 p.m.

In order to assess whether nonstandard work hampers or assists parents' ability to participate in activities related to a children's education, we use a measure of time engaged in *children's education* which is the total amount of minutes per day parents report helping with homework, attending school meetings and conferences, attending children's events such as sporting events or school plays. Given that we only have one day per respondent and diary data are much better at capturing routine behavior, we also include a separate estimate of time spent helping with *homework* to assess parents participation in an educational activity that happens with greater frequency than student plays or parent-teacher conferences.

Finally, maximizing the rich level of detail in the ATUS, we include a measure of parent's availability during the 3:00 p.m. to 6:00 p.m. time period. Exploiting the data on *where* respondents report being during each daily activity, we include a continuous variable equal to the total number of minutes per day between 3:00 p.m. and 6:00 p.m. that parents report being at home. We assess differences in time in educational activities, helping with homework, and being at home between 3:00 p.m. and 6:00 p.m. among those workers with nonstandard and standard

hours on the diary day. These measures are restricted to those who have at least one school-aged child present in the household, which is defined as a child age 6 or older.

Spousal Time

We construct two measures of time with spouse: *any time with a spouse* and *time spent alone with a spouse.* Any time with a spouse is the total minutes per day married respondents report doing any activity with a spouse present. Time alone with a spouse is a more restricted measure of one-on-one spousal time where the respondent reports being alone with his/her spouse.

Time for Oneself: Personal Care and Discretionary Time

We used four time-diary measures to examine how nonstandard work hours were associated with time for oneself: *sleep*, *exercise*, *free time*, and *television*. Sleep is a continuous measure constructed by summing the total minutes per day respondents report sleeping in the diary. *Exercise* was constructed by summing the total minutes per day spent engaged in exercise, active sports (both inside and outdoor), and walking and hiking. An aggregate measure of *free time* is constructed by summing the total number of minutes per day respondents report engaging in any free-time activity. Time spent watching *television* is a continuous measure equal to the total minutes per say respondents report watching television.

Covariates of Time Use

We also include measures of age, race, education, marital status, work hours, number of children, and presence of a preschooler to assess the characteristics associated with parents who work nonstandard hours on their diary day and to control for important covariates in the models

estimating differences in time use between those who do and do not work nonstandard hours on their diary day. The time of year the diary was collected and the number of activities reported in the diary are included as control variables in both analyses.

Age is coded into three categories: age 18–34, 35–44, and 45–64, where age 35–44 is the reference category in the regression analyses. Race is a dichotomous variable coded one for white respondents and zero for nonwhite respondents. Education is coded into three categories: high school graduate or less, some college, and bachelor's degree or more. High school or less is the reference group for the regressions. Marital status is coded one for respondents who report being married with a spouse present at the time they completed the diary interview and zero for all others.

Number of children is a continuous measure of own children under age 18 in the household. The presence of a preschooler is a dichotomous variable coded one if a child under age 6 is present in the household. Because time with children may vary by whether children are in school or whether they are on summer break, we created a dichotomous variable coded one if the diary was sampled during the summer months of June–August and zero for all other months. The number of activities reported on the diary is a continuous variable equal to the number of distinct activity periods reported on the diary.

Work hours are estimated in two ways. The model predicting nonstandard work hours uses the survey estimate of "usual" work hours as a control for work hours. Respondents who were missing on this variable or who reported their hours varied were recoded to the mean work hours for full-time workers if they reported working full time, or the mean for part-time workers if they reported working part time. Among fathers, 7 part-time and 58 full-time workers were recoded, and among mothers, 37 part-time and 33 full-time workers were recoded. In the

regressions that estimate the association of nonstandard hours with other time uses, we control for work hours using total hours of paid work on the diary day. We show that among those who work nonstandard hours, mothers average an hour less and fathers average close to 30 minutes less of paid work on the diary day than parents who work standard hours. Hence, we control for work hours on the diary day so as not to attribute to nonstandard hours an association that may reflect an unusually long or short work day on the diary day.

Analytic Strategy

Using the ATUS as a sample of work days across the year, and restricting our sample to only respondents with a work day diary on a weekday, we first examine *when* paid work occurs across the 24-hour day with a focus on the stereotypical "standard" 8:00 a.m. to 4:00 p.m. work day hours. A workday diary is defined as one in which a respondent reports engaging in some paid work on the day of their diary.

Second, we estimate logistic regression models to examine the relationship between demographic characteristics and time spent in market work outside the standard 8:00 a.m. to 4:00 p.m. workday. We present models separately for mothers and fathers because the association between key demographic indicators and the likelihood of having nonstandard work hours varies by sex.

Third, we estimate a number of ordinary least squares (OLS) regression models to examine the association between nonstandard work hours and other uses of time, controlling for other characteristics that affect time use. Using multiple measures of childcare time, time with a spouse, and multiple measures of one's restorative time, we examine whether time engaged in these activities differs between parents who work standard daytime hours on their diary day and

those who work nonstandard hours on their diary day, controlling for important covariates such as age, race, education, work hours, marital status, presence of a preschooler, season of the diary, and number of activities reported. Furthermore, because time use measures are often left-censored in that respondents may report zero minutes engaged in an activity on the diary day, we also use tobit regression to assess the relationship between the scheduling of work and time engaged in nonwork activities and time with family. However, parameter estimates from a tobit regression are not interpreted in the same way as estimates from linear regression. Thus, we present and discuss our main findings in terms of our OLS results because their interpretation is more straightforward. We present models separately for mothers and fathers as research indicates the effect of nonstandard work on time use may differ by sex.

Results

Figure 1 shows the percentage of mothers and fathers with a workday diary who report doing any work across each hour of the day. The figure indicates that work largely takes place across the stereotypical daytime standard hours (see Figure 1). The percentage of mothers and fathers reporting work during the early hours of the morning (e.g., 4:00–5:00 and 5:00–6:00 a.m.) is fairly small—averaging about five and 10 percent for mothers and about 10 and 20 percent for fathers, respectively. Paid work tapers off during the late afternoon, most notably between the 5:00–6:00 p.m. and 6:00–7:00 p.m. work-hour intervals among both mothers and fathers—a decline from 48.3 to 26.0 for mothers and 58.4 to 36.1 for fathers, or an approximately 22 percentage point decline for both.

[Figure 1 about here]

Table 1 shows the means and percentage distributions of selected sample characteristics as well as the percentage of mothers and fathers who worked nonstandard hours on the day of their diary. Only a small percentage of mothers (12.9 percent) and fathers (14.1 percent) have nonstandard workday diaries. This percentage is smaller than previous estimates. We attribute this difference to the fact that prior research typically includes workers with rotating schedules or varying hours in estimating the prevalence of nonstandard work. We are unable to determine from a single diary day whether a respondent works a rotating schedule or whether their hours vary.

[Table 1 about here]

From Table 1 we can also see the characteristics associated with the likelihood of parents working nonstandard work hours on their diary day. Consistent with previous research, both mothers and fathers with a nonstandard workday diary have lower levels of educational attainment, work fewer hours, and are more often nonwhite. However, unlike past research, we find the presence of a preschooler is associated with a greater likelihood of having a nonstandard workday diary, and this finding is supported in the multivariate analysis as well.

Table 2 presents coefficients and odds ratios from logistic regressions predicting the likelihood of working nonstandard hours on the diary day. The results from the multivariate models generally support what we find in Table 1. That is, age, presence of a child under age 6, high levels of education, and usual work hours are significantly associated with having a nonstandard workday diary for both mothers and fathers. In the case of age, the odds of working nonstandard hours on the diary day relative to working standard hours are 1.47 times higher for mothers and 1.39 times higher for fathers aged 45–65 than for their counterparts aged 35–44.

For both mothers and fathers, the odds of nonstandard work are greater if there is a preschooler present compared to parents without a young child in the household. Having at least a college degree is associated with a lower likelihood of working nonstandard hours. The odds of working nonstandard hours are lower if mothers report greater usual work hours and the odds of working nonstandard hours are slightly higher if fathers report greater usual work hours. However, only in the case of fathers was being white significantly associated with the odds of working nonstandard work hours—the odds of working nonstandard work hours were lower among white fathers compared to their nonwhite counterparts.

[Table 2 about here]

Next we examined the average minutes per day mothers and fathers were engaged in selected activities and how this time differs by whether they worked nonstandard or standard hours on their diary day. Table 3 shows the difference for mothers and Table 4 shows the difference for fathers by nonstandard work status in minutes per day parents spend on selected activities. We present the unadjusted means for those with nonstandard work hours and standard work hours—and the difference between the two in the first three columns of Tables 3 and 4.

The amount of paid work reported in the diaries of mothers varied significantly by whether the respondent worked nonstandard work hours on their diary. The results suggest that mothers working "nonstandard" hours work an hour less per day than mothers with standard workday diaries. This finding is also consistent with results in Tables 1 and 2. The difference was smaller, 17 minutes less, for fathers and not statistically significant. Given this difference in work hours, we then adjusted other time uses using OLS regression where we included a control for paid work hours on the diary day in the regression. These estimates are shown in column four. Column 5 reports "effects" for nonstandard work hours on the diary day for OLS models

with a full set of controls (see appendix Tables A1–A6 for the full regression results). The last column reports coefficients from Tobit regressions, allowing us to assess the robustness of the findings to different estimation strategies.

[Tables 3 and 4 about here]

Time with Children

Mothers with a nonstandard workday diary appear to spend fewer minutes per day in routine childcare than mothers with a standard workday diary (see Table 3). In contrast, fathers with a nonstandard workday diary spend about 9 minutes *more* in routine care, relative to fathers with a standard work day diary (see Table 4). However, this finding should be interpreted with caution as the tobit coefficient does not suggest that fathers with and without a nonstandard workday diary differ significantly in the amount of routine childcare they provide, and this is likely related to the fact that about half the fathers were censored on this variable (see Table A7). When we look specifically at reading to or with a child, we focus on the tobit estimates, given the high level of left censorship on this variable. Both mothers and fathers with a nonstandard workday diary spend less time reading to their children than their counterparts with a workday diary.

Despite slight variations in time across different types of childcare activities, there does not appear to be a significant difference by nonstandard work status in the overall time mothers or fathers spend with their children. Yet, fathers who worked nonstandard work hours on their diary day spend significantly more time than their standard counterparts *alone* with their child—approximately 30 minutes per day for fathers after adjusting for work hours reported on the diary and sociodemographic characteristics. These findings are consistent with Presser's (1988) work

that fathers with nonstandard work schedules spend more time with children than fathers with a conventional work schedule.

Somewhat consistent with our expectations, mothers and fathers with nonstandard hours both spend significantly fewer minutes per day eating dinner with their children than their counterparts with standard hours. However, we do not find evidence that they spend any more or less time eating breakfast with their children than those with more conventional work hours.

When it comes to parents with school-aged children, we find evidence that mothers working nonstandard hours on their diary day have more difficulty than their standard counterparts participating in their children's educational activities such as attending PTA meetings or school plays. When we estimate time engaged in educational activities using Tobit regression, which adjusts for censoring, we find that fathers also spend less time engaged in these activities. However, there are no significant differences among mothers or fathers in the amount of time helping with homework or in the amount of time at home during the 3:00–6:00 p.m. time period.

Time with Spouse

As expected, work during nonstandard hours has considerable consequences for spousal time. Table 3 shows married mothers with a nonstandard workday diary spend much less time than married mothers with a standard workday diary in any activities with a spouse present. The gap in time spent alone with a spouse between married mothers with a nonstandard and standard workday diary is somewhat smaller. Yet the association remains. Married mothers who work nostandard work hours spend less time alone with their spouse than their counterparts with a standard workday diary.

Married fathers with a nonstandard diary day also spend significantly less time with their spouse relative to married fathers with a standard work schedule. However, unlike married mothers, there is not a significant difference by nonstandard status in the time married fathers spent *alone* with their spouse.

Time for Oneself: Personal Care and Discretionary Time

When it comes to personal care and discretionary time, it appears that both mothers and fathers with a nonstandard workday diary may shed sleep in order to conform to the normative social rhythms of a daytime schedule. According to the OLS coefficients, mothers with a nonstandard workday diary sleep about 20 minutes less per day and fathers sleep about 18 minutes less per day compared to their "standard" counterparts. Tobit estimates for fitness related activities, activities that a small number of parents report doing on their diary day, suggest few differences between parents who work standard and those with nonstandard hours.

Most mothers and fathers report some amount of free time on the diary day. Mothers who work nonstandard work hours on their diary day report about 20 fewer minutes of free time when compared to mothers who work standard hours. There is no significant difference in free time for fathers by nonstandard status. However, both mothers and fathers spend significantly less time watching television than parents with a standard workday diary.

Discussion

Much of the literature paints a negative picture of the "costs" associated with nonstandard work to workers' families and themselves. However, it does not appear that all lose out when parents

work outside the bounds of the "standard" hours. Our findings suggest that there are both positives as well as negatives associated with this increasingly common work arrangement.

When it comes to spending time with children, we find that both mothers and fathers with nonstandard workday diaries spend either similar amounts of time in childcare activities when compared to their counterparts with standard workday diaries, or they spend more time (with few exceptions). The considerable amount of time “nonstandard” mothers and fathers spend alone with their children, reaching upwards of 30 minutes more per day for mothers and exceeding the half-hour mark for fathers, when compared to parents with standard daytime diaries, suggests that “nonstandard” parents may be spending more time parenting solo. This supports previous findings that nonstandard work arrangements encourage active father involvement. Not only are fathers more involved when they work nonstandard hours, they are more likely to be doing so alone, without the help of spouses or other caregivers. Thus, children may be experiencing more gender egalitarian parenting—potentially a good signal to the next generation for the future sharing of adult parenting roles.

When it comes to parents with school-aged children, we find that mothers and fathers with nonstandard workday diaries find it difficult to participate in their children’s educational attainment process. Parents who worked nonstandard hours on their diary days spend less time engaged in educational activities such as helping with homework or attending PTA meetings or school recitals. Further, working a nonstandard schedule does not appear to help parents of school-aged children better supervise the after school hours. Parents with nonstandard hours on the diary day spend similar amounts of time at home between 3:00 p.m. and 6:00 p.m. as parents who work standard schedules.

At first blush, nonstandard work yields mixed results when it comes to spending time with children. However, parents with nonstandard workday diaries appear to lose time with their spouses and time for themselves. The large gaps in time with a spouse are consistent with previous literature documenting the costs associated with dual-earning and working nonoverlapping shifts. The smaller gaps in time alone with a spouse suggest that when nonstandard workers do lose time with their spouse, most of that time is in the context of time with other people, such as when the entire family is together. Both the losses in time with a spouse and time for oneself suggest that these types of time may be the easiest to negotiate away. But we would argue these types of time are two-thirds of the troika that constitute healthy family functioning: time with children, time with a spouse, and time for oneself. Thus, despite the ability of parents with nonstandard workday diaries to protect some types of time with their children, we must consider the costs of doing so and who bears those costs. Arguably no one fairs well in a stressed out environment.

There are limitations to this research that should be considered. First, further research in this area needs to consider how time use patterns vary by the type of shift worked. Small sample sizes limit our ability to look at evening and night shift work separately. However, release of the 2005 ATUS data may help bolster the sample sizes of parents with nonstandard workday diaries so that analyses can be done separately across the different nonstandard work schedule arrangements. In addition, we need to consider more fully the joint effect of working nonstandard work schedules. That is, what do spouses do when their partner works a nonstandard work schedule? Linking a small number of ATUS respondents to the CPS work schedule supplement will allow us to begin to assess in greater detail how work and family are negotiated when one or both spouses work a nonstandard work schedule. However, it would be

highly desirable to expand collections of time use data to both members of the couple. This is the only way to fully assess tradeoffs and the joint costs and benefits of trying to mesh parental work schedules in two-parent families.

Finally, we would like to know how people feel about their time expenditures—information that has been available on past time-diary collections but is not collected in the ATUS. Are parents who work nonstandard hours more stressed out than their standard counterparts? Our objective measures, such as less sleep, suggest this might be the case. Further, we would like to know to what extent people are choosing these work arrangements. That is, are parents actively tag-teaming to promote equal care giving or are they "forced" into working less conventional, less desirable shifts because they have low levels of human capital and therefore less bargaining power in the work place?

References

Beers, T. M. (2000). Flexible schedules and shift work: Replacing the '9-to-5' workday? *Monthly Labor Review, 123*(6), 33-40.

Bianchi, S. M., Robinson, J. P., & Milkie, M. A. (2006). *Changing Rhythms of American Family Life*. New York: Russell Sage.

Blair, S. L. (1993). Employment, family, and perceptions of mariatl quality among husbands and wives. *Journal of Family Issues, 14*, 189-212.

Brown, D. (1975). Shiftwork: A survey of sociological implications of studies of male shiftworkers. *Journal of Occupational Psychology, 48*, 231-240.

Cohen, D. A., Farley, T. A., Taylor, S. N., Martin, D. H., & Schuster, M. A. (2002). When and where do youths have sex? The potential role of adult supervision. *Pediatrics, 110*(6).

Craig, L. (2005). *Where do they find the time? An analysis of how parents shif and squeeze their time around work and childcare.* Paper presented at the Time Use and Economic Well-Being, Levy Economics Institute of Bard College, NY.

Crouter, A. C., Bumpus, F. F., Head, M. R., & McHale, S. M. (2001). Implications of overwork and overload for the quality of men's family relationships. *Journal of Marriage & Family, 63*, 404-416.

Davis-Kean, P. E. (2005). The influence of parent education and family income on child achievement: The indirect role of parental expectations and the home environment. *Journal of Family Psychology, 19*(2), 294-304.

Deutsch, F. (1999). *Halving It All: How Equally Shared Parenting Works*. Cambridge, MA: Harvard University Press.

DeVault, M. L. (1991). *Feeding the Family: The Social Organization of Caring as Gendered Work*. Chicago: University of Chicago Press.

Dinges, D. F. (2005). *Time use for sleeping in relation to waking activities.* Paper presented at the ATUS Early Results Conference, Bethesda, MD, December 8-9.

Durmer, J. S., & Dinges, D. F. (2005). Neurocognitive consequences of sleep deprivation. *Seminars in Neurology, 25*(1), 117-129.

Epstein, C. F., & Kalleberg, A. L. (2004). *Fighting for time: Shifting boundaries of work and social life*: Russel Sage Foundation Publications.

Fiese, B. H., Tomcho, T. J., Douglas, M., Josephs, K., Poltrock, S., & Baker, T. (2002). A review of 50 years of research on naturally occurring family routines and rituals: Cause for celebration? *Journal of Family Psychology, 16*, 381-390.

Fox, J. A. (1996). *Trends in juvenile violence: A report to the United States Attorney General on Current and Future Rates of Jevenile Offending*. Washington, DC: Bureau of Justice Statistics, United States Department of Justice.

Hamermesh, D. S. (1999). Time timing of work over time. *The Economic Journal, 109*(452), 37-66.

Han, W.-J. (2002). *Who is working nonstandard hours during the early years of a child's life? What are the likely consequences*

for mothers? , Columbia University, mimeo, New York.

Han, W.-J. (2004). Nonstandard work schedules and child care decisions: Evidence from the NICHD Study of Early Child Care. *Early Childhood Research Quarterly, 19*, 231-256.

Hedges, J. N., & Sekscenski, E. S. (1979). Workers on late shifts in a changing economy. *Monthly Labor Review, 102*(2), 14-22.

Heymann, J. (2000a). What happens during and after school: Conditions faced by working parents living in poverty and their school-aged children. *Journal of Children and Poverty, 6*(1), 5-20.

Heymann, J. (2000b). *The Widening Gap: Why America's Working Families are in Jeopardy and What Can Be Done About It.* New York: Perseus Books.

Jacobs, J. A., & Gerson, K. (2004). *The Time Divide: Work, Family, and Gender Inequality*. Cambridge: Harvard University Press.

Kanter, R. M. (1977). *Work and Family in the United States: A Critical Review and Agenda for Research and Policy*. New York: Russell Sage Foundation.

Marini, M. M., & Shelton, B. A. (1993). Measuring Household Work: Recent Experiences in the United States. *Social Science Research, 22*, 361-382.

Moen, P. (2003). *It's about time: Couples and careers*: ILR Publisher.

Paley, I. (2005). *Right place, right time: Parents' employment schedules and the allocation of time to children.* Paper presented at the Annual Meeting of the Population Association of America, Philadelphia, PA.

Perry-Jenkins, M., Goldberg, A., Pierce, D., & Haley, H. (under review). Employment schedules and the transtion to parenthood: Implications for mental health and marriage.

Polivka, A. E. (2005). *Shift work and participation in social, recreational, or exercise activities.* Paper presented at the ATUS Early Results Conference, Bethesda, MD, December 7-8.

Presser, H. B. (1986). Shift work among American women and child care. *Journal of Marriage & Family, 48*(3), 551-563.

Presser, H. B. (1988). Shift Work and Child Care among Young Dual-Earner American Parents. *Journal of Marriage and the Family, 50*, 133-148.

Presser, H. B. (1995). Job, Family, and Gender: Determinants of Nonstandard Work Schedules. *Demography, 32*(4), 577-598.

Presser, H. B. (2000). Nonstandard Work Schedules and Marital Instability. *Journal of Marriage & Family, 62*, 93-110.

Presser, H. B. (2003). *Working in a 24/7 Economy: Challenges for American Families*. New York: Russell Sage Foundation Publications.

Presser, H. B. (2004). The Economy that Never Sleeps. *Contexts, 3*(2), 1-5.

Presser, H. B., & Altman, B. (2002). Work shifts and disability: A national view. *Monthly Labor Review, 125*(9), 11-24.

Presser, H. B., & Cox, A. G. (1997). The Work Schedules of Low-Educated American Women and Welfare Reform. *Monthly Labor Review, 120*(4), 25-34.

Richardson, J., Radziszewska, B., Dent, C., & Flay, B. (1993). Relationship between after-school care of adolescents and substance use, risk taking, depressed mood, and academic achievement. *Pediatrics, 92*, 32-38.

Robinson, J. P., & Bostrom, A. (1994). The overestimated workweek? What time diary measures suggest. *Monthly Labor Review, 117*(8), 11-23.

Robinson, J. P., & Gershuny, J. (1994). Measuring hours of paid work: Time-diary vs. estimate questions. *Bulletin of Labor Statistics*, Geneva: International Labor Office, xi-xvii.

Robinson, J. P., & Godbey, G. (1997). *Time for Life: The Surprising Ways Americans Use their Time* (2nd ed.). University Park, PA: Pennsylvania State University Press.

Rones, P. L., Randy E. Ilg, and Jennifer M. Gardner. (1997). Trends in Hours of Work Since the mid-1970s. *Monthly Labor Review*(April), 3-14.

Roy, K. M., Tubbs, C. Y., & Burton, L. M. (2004). Don't have no time: Daily rhythms and the organization of time for low-income families. *Family Relations, 53*, 168-178.

Rubin, L. B. (1994). *Families on the Fault Line*. New York: Harper Perennial.

Snyder, H. N., & Sickmund, M. (1999). *Juvenile offenders and victims: 1999 national report.* Washington, DC: Office of Juvenile Justice and Delinquency Prevention.

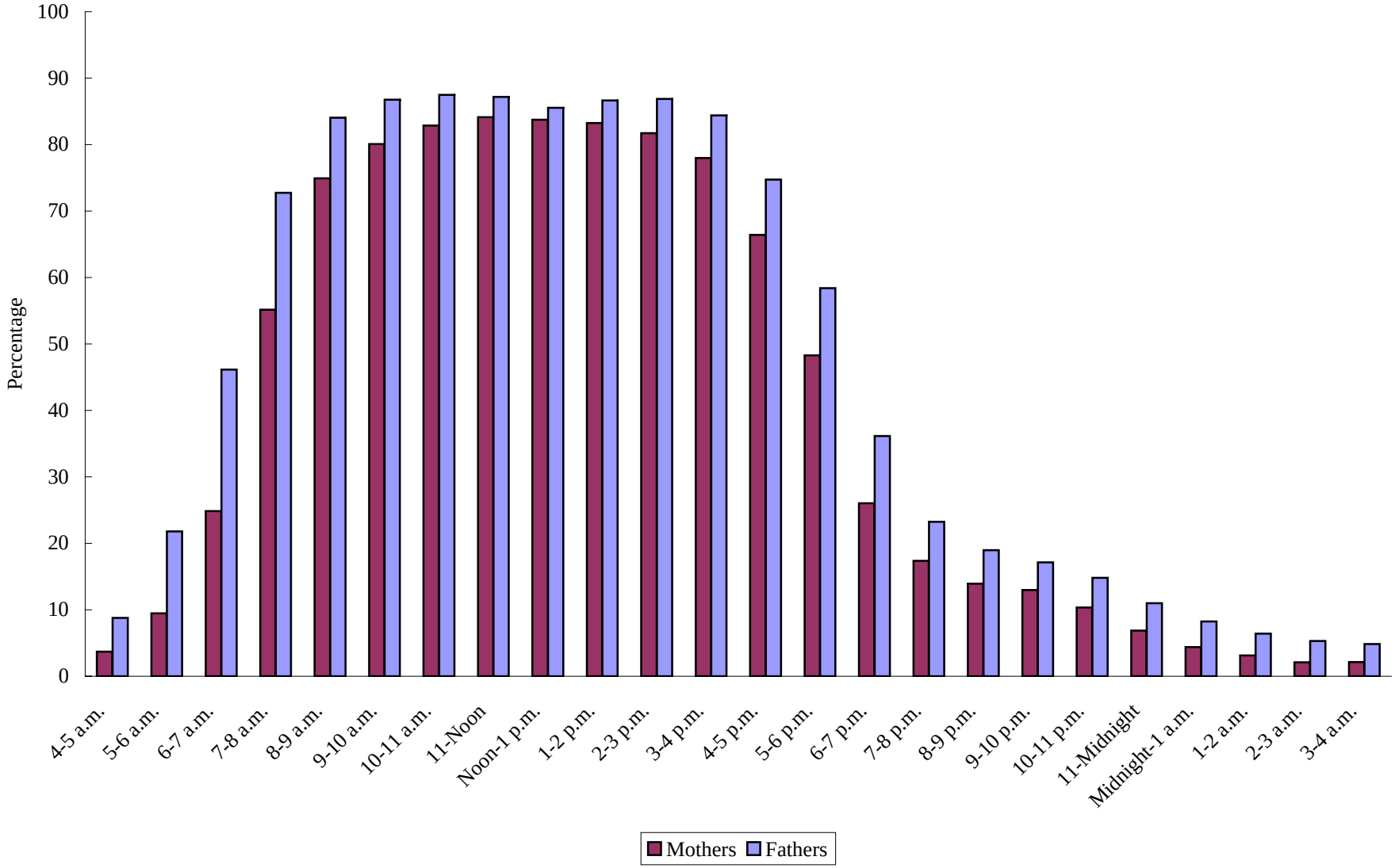
Staines, G. L., & Pleck, J. (1983). *The Impact of Work Schedules on the Family*. Ann Arbor: University of Michigan, Institute for Social Research.

Tausig, M., & Fenwick, R. (2001). Unbinding Time: Alternate Work Schedules and Work Life Balance. *Journal of Family and Economic Issues, 22*(2), 101-119.

Wedderburn, A. (2001). Shiftwork and Health. *Bulletin of Studies on Time, 1*, Luxembourg: Office for the Official Publications of the European Communities.

White, L., & Keith, K. (1990). The Effect of Shift Work on the Quality and Stability of Marital Relations. *Journal of Marriage and the Family, 52*(2), 453-462.

Figure1. Percentage of Mothers' and Fathers' Workdays with Work Reported in Each Hour of the Day, 2003-2004



Source: Authors' calculations of the 2003 and 2004 American Time Use Surveys.

Table 1. Percentage of Mothers and Fathers with Standard and Nonstandard Workday Diaries by Selected Demographic Characteristics, 2003-2004

	Mothers			Fathers		
	Total	**Standard Workday Diary** (50-100 % of hours b/w 8am and 4pm on a weekday)	**Nonstandard Workday Diary** (50-100 % of hours b/w 8am and 4pm on a weekday)	**Total**	**Standard Workday Diary** (50-100 % of hours b/w 8am and 4pm on a weekday)	**Nonstandard Workday Diary** (50-100 % of hours b/w 8am and 4pm on a weekday)
Total	-	87.1%	12.9%	-	85.9%	14.1%
Age 18 to 34	33.8%	33.6%	35.7%	29.6%	28.1%	38.7% [B]
Age 35 to 44	46.2%	46.8%	42.3%	43.7%	44.7%	37.2% [B]
Age 45 to 64	19.9%	19.6%	22.0%	26.7%	27.1%	24.2%
White	81.8%	82.0%	80.8%	84.9%	85.6%	80.7% [B]
Percent Married	71.7%	71.7%	71.6%	93.0%	92.9%	93.4%
Mean Number of Children	1.7	1.7	1.8	1.9	1.9	1.9
Presence of Child Under Age 6	34.9%	33.8%	42.5% [A]	47.4%	45.9%	56.6% [B]
High school graduate or less	35.3%	34.0%	43.8% [A]	39.9%	38.5%	48.4% [B]
Some college, no degree	31.8%	31.8%	31.8%	24.1%	23.0%	31.0% [B]
College degree or more	32.9%	34.2%	24.4% [A]	36.0%	38.5%	20.6% [B]
Mean Usual Work Hours	36.6	37.1	32.8 [A]	45.5	45.2	46.9 [B]
Summer diary	25.3%	24.7%	29.7%	24.3%	24.9%	20.4%
Number of Activities in Diary	24.7	24.5	25.6	19.6	19.8	18.7 [B]
Sample size (N)	(2,027)	(1,772)	(255)	(2,054)	(1,785)	(269)

Note. Sample restricted to employed mothers and fathers with a weekday, workday diary. Percentage distributions are weighted; sample sizes are not.

[A] Mothers with standard schedules are statistically significantly different from mothers with nonstandard schedules, $p < 0.05$

[B] Fathers with standard schedules are statistically significantly different from mothers with nonstandard schedules, $p < 0.05$

Table 2. Logistic Regression Coefficients Predicting Working Nonstandard Work Hours on Diary Day by Demographic Characteristics, 2003-2004

	Mothers			Fathers		
	Coefficient	Odds Ratio		Coefficient	Odds Ratio	
Intercept	-0.81		*	-2.53		***
Age (35-44 omitted)						
Age 18 to 34	-0.13	0.88		0.24	1.27	
Age 45 to 64	0.39	1.47	*	0.33	1.39	*
White	-0.18	0.83		-0.41	0.66	**
Family Characteristics						
Married	0.03	1.03		0.24	1.27	
Number of Children	0.03	1.03		0.05	1.05	
Presence of Child Under Age 6	0.51	1.67	**	0.47	1.60	***
Education (High School Only omitted)						
Some college, no degree	-0.24	0.79		0.08	1.09	
College degree or more	-0.70	0.50	***	-0.92	0.40	***
Usual Work Hours	-0.03	0.97	***	0.02	1.02	***
Summer diary	0.26	1.30		-0.27	0.77	
Number of Activities in Diary	0.01	1.01		-0.02	0.99	*
Sample size (N)	(2,027)	(2,027)		(2,054)	(2,054)	

Note. Sample restricted to employed mothers and fathers with a weekday, workday diary.

***p < 0.001, **p<0.01, *p<0.05

Table 3: Time Use Trends of Mothers by Work Arrangement, 2003-2004 (minutes per day)

	Nonstandard Workday Diary	Standard Workday Diary	Difference	OLS Regression Coefficients for Nonstandard Workday Diary: Adjusted for Diary Work Hours Only	OLS Regression Coefficients for Nonstandard Workday Diary: Adjusted for Diary Work Hours and Selected Covariates	Tobit
Mothers						
Total Paid Work	410.9	473.6	-62.7 ***	—	—	—
Time with Children						
Any Time with Children	254.1	217.4	36.7 ***	7.9	4.4	-1.4
Any Time Alone with Children	174.0	131.9	42.1 ***	23.4 **	20.2 **	14.3
Primary Childcare	97.9	91.3	6.5	-5.8	-6.8	-13.3
Routine Childcare	65.7	67.4	-1.7	-10.0 *	-11.3 *	-18.6 **
Engaged Childcare	32.2	24.0	8.2 **	4.2	4.5	-2.6
Reading to Children	1.4	2.4	-1.0	-1.3 *	-1.1 *	-23.1 **
Eating Breakfast with Children	3.4	2.0	1.4 **	1.0 *	1.0 *	7.1
Eating Dinner with Children	8.9	16.0	-7.1 ***	-8.1 ***	-7.7 ***	-22.5 ***
Education-related Childcare[A]	9.4	14.6	-5.2 *	-7.0 **	-5.4 *	-30.3 **
Helping with Homework[A]	5.9	9.0	-3.1	-3.8 *	-2.9	-19.3
At Home between 3-6pm[A]	69.4	53.7	15.7 ***	7.5	6.5	0.3
Time with Spouse						
Any Time with Spouse[B]	80.5	104.1	-23.6 **	-48.3 ***	-48.4 ***	-61.4 ***
Time with Spouse Only[B]	32.7	40.8	-8.1	-16.5 **	-15.9 *	-24.5 *
Personal Care and Discretionary Time						
Sleep	447.7	455.6	-7.9	-17.7 **	-20.6 ***	-20.8 *
Fitness	11.2	7.4	3.9 *	2.7	3.3 *	-0.1
Freetime	166.8	173.4	-6.6	-24.1 **	-21.6 **	-26.8 *
Watching TV	62.2	78.2	-16.0 **	-22.6 ***	-23.3 ***	-41.2 ***
N	255	1,772				

Note. Sample restricted to employed mothers and fathers with a weekday, workday diary.

[A]Sample restricted to mothers with children age 6 or older. (Total N=1630: 184 mothers with a nonstandard workday diary and 1,446 with a standard workday diary.)

[B]Sample restricted to married mothers (Total N =1,349: 173 married mothers with a nonstandard workday diary and 1,176 with a standard workday diary.)

***p-value < .001, **p-value < .01, *p-value < .05.

Table 4: Time Use Trends of Fathers by Work Arrangement, 2003-2004 (minutes per day)

	Nonstandard Workday Diary	Standard Workday Diary	Difference	OLS Regression Coefficients for Nonstandard Workday Diary: Adjusted for Diary Work Hours Only	OLS Regression Coefficients for Nonstandard Workday Diary: Adjusted for Diary Work Hours and Selected Covariates	Tobit
Fathers						
Total Paid Work	547.6	565.2	-17.6	—	—	—
Time with Children						
Any Time with Children	174.9	158.8	16.1	9.6	5.7	-5.8
Any Time Alone with Children	91.9	59.7	32.1 ***	29.3 ***	29.8 ***	37.7 **
Primary Childcare	58.6	50.5	8.1	6.3	7.1	1.0
Routine Childcare	37.5	30.5	6.9 *	5.9	8.6 **	7.8
Engaged Childcare	21.1	19.9	1.2	0.5	-1.4	-18.7
Reading to Children	0.7	1.5	-0.8	-0.8	-0.7	-23.6 *
Eating Breakfast with Children	2.0	2.2	-0.2	-0.3	0.1	1.1
Eating Dinner with Children	6.4	16.6	-10.1 ***	-10.4 ***	-10.0 ***	-29.4 ***
Education-related Childcare[A]	7.0	10.2	-3.2	-3.6	-3.3	-46.1 *
Helping with Homework[A]	4.0	5.4	-1.5	-1.6	-1.8	-33.9
At Home between 3-6pm[A]	47.7	45.1	2.6	0.3	-2.7	-14.4
Time with Spouse						
Any Time with Spouse[B]	125.8	151.7	-25.9 **	-34.2 ***	-34.9 ***	-57.3 ***
Time with Spouse Only[B]	46.1	56.2	-10.1	-13.3 *	-9.4	-30.1
Personal Care and Discretionary Time						
Sleep	439.2	447.2	-8.0	-11.0	-18.5 **	-15.6 *
Fitness	10.6	11.5	-0.9	-1.6	1.1	-1.5
Freetime	187.8	185.7	2.1	-5.0	-5.3	-11.0
Watching TV	79.1	92.1	-13.0 *	-15.8 **	-24.3 ***	-43.4 ***
N	269	1,785				

Note. Sample restricted to employed mothers and fathers with a weekday, workday diary.

[A]Sample restricted to fathers with children age 6 and older. (Total N=1,876: 186 fathers with a nonstandard workday diary and 1,338 with a standard workday diary.)

[B]Sample restricted to married fathers. (Total N =1,349: 247 married fathers with a nonstandard workday diary and 1,629 with a standard workday diary.)

***p-value < .001, **p-value < .01, *p-value < .05.

Table A1. OLS Regression Estimates of Mothers' and Fathers Daily Minutes in Paid and Unpaid Work Activities: 2003-2004

	Paid Work	
	Mothers	Fathers
Nonstandard workday diary	**-50.8** **	**-24.6** *
Age (35-44 omitted)		
18-34	-12.6	1.5
45-64	-13.0	-10.8
White	-1.2	16.5
Family Characteristics		
Married	-14.1	11.1
Number of children	-7.3	6.4
Preschooler present	-0.9	0.3
Education (High School Only omitted)		
Some college	7.3	23.5 **
College graduate	13.2	26.1 **
Diary work hours	—	—
Summer diary	-6.4	8.4
Number of activities	-8.9 ***	-8.8 ***
Intercept	716.9 ***	687.3 ***
N	2,027	2,054

Source: Authors' calculations from the 2003 and 2004 American Time Use Survey.
***p-value < .001, **p-value < .01, *p-value < .05.

Table A2. OLS Regression Estimates of Mothers' and Fathers' Daily Minutes in Primary, Routine, and Engaged Childcare Activities: 2003-2004

	(Primary) Childcare		Routine Childcare		Engaged Childcare		Read to Child	
	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers
Nonstandard workday diary	**-6.8**	**7.1**	**-11.3 ***	**8.6 ****	**4.5**	**-1.4**	**-1.1 ***	**-0.7**
Age (35-44 omitted)								
18-34	-5.4	-7.9	-3.0	-7.3 *	-2.4	-0.6	0.0	-0.4
45-64	-16.3 **	-17.4 ***	-12.0 **	-12.2 ***	-4.3	-5.2 *	-1.4 *	-0.1
White	4.2	-2.7	0.8	-1.0	3.4	-1.7	0.8	0.6
Family Characteristics								
Married	-4.0	-9.3	-3.9	-10.2 *	-0.1	0.9	0.8	-0.1
Number of children	10.7 ***	3.6 *	10.3 ***	1.3	0.4	2.3 *	-0.2	-0.1
Preschooler present	64.6 ***	27.6 ***	48.4 ***	15.4 ***	16.1 ***	12.2 ***	2.6 ***	1.8 ***
Education (High School Only omitted)								
Some college	10.7 *	4.0	5.3	1.8	5.3 *	2.2	1.4 **	0.7
College graduate	23.4 ***	13.0 ***	14.2 ***	12.2 ***	9.2 ***	0.8	2.3 ***	1.1 **
Diary work hours	-8.0 ***	-4.8 ***	-4.6 ***	-2.2 ***	-3.4 ***	-2.6 ***	-0.2 *	-0.1
Summer diary	-16.0 ***	-8.7 *	-9.7 **	-6.0 *	-6.3 **	-2.7	-0.4	-0.4
Number of activities	2.0 ***	1.6 ***	1.9 ***	1.6 ***	0.2	-0.1	0.1 *	0.1 ***
Intercept	61.3 ***	59.1 ***	25.3 **	21.8 **	36.0 ***	37.3 ***	-0.4	-1.3 ***
N	2,027	2,054	2,027	2,054	2,027	2,054	2,027	2,054

Source: Authors' calculations from the 2003 and 2004 American Time Use Survey.
***p-value < .001, **p-value < .01, *p-value < .05.

Table A3. OLS Regression Estimates of Mothers' and Fathers' Daily Minutes in Selected Childcare Activites: 2003-2004

	Any Time with Child		Any Time Alone with Child		Eat Breakfast with Children		Eat Dinner with Children	
	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers
Nonstandard workday diary	**4.4**	**5.7**	**20.2** **	**29.8** ***	**1.0** *	**0.1**	**-7.7** ***	**-10.0** ***
Age (35-44 omitted)								
18-34	3.2	11.6	-12.8 *	-8.9	-1.1 **	-0.6	0.9	1.2
45-64	-26.3 ***	-18.4 **	-8.3	-6.4	-0.1	-0.3	1.2	0.0
White	31.5 ***	11.1	10.6	-2.1	1.3 **	0.4	1.9	5.1 ***
Family Characteristics								
Married	-3.4	7.1	-34.1 ***	-48.7 ***	0.3	0.0	3.0 **	1.2
Number of children	36.2 ***	2.4	30.6 ***	2.9	0.2	0.3	0.6	0.2
Preschooler present	68.1 ***	54.1 ***	50.3 ***	27.8 ***	1.4 ***	0.3	1.5	1.3
Education (High School Only omitted)								
Some college	9.3	0.8	11.7	9.6	0.5	0.5	2.4 *	4.2 ***
College graduate	25.3 ***	9.5	12.0	8.0	1.3 **	2.4 ***	5.1 ***	4.2 ***
Diary work hours	-25.0 ***	-21.7 ***	-15.1 ***	-8.4 ***	-0.3 ***	-0.2 **	-1.1 ***	-0.8 ***
Summer diary	-3.4	0.5	-8.7	-1.4	0.2	-0.5	-2.1 *	-1.2
Number of activities	0.5	1.2 **	1.2 ***	1.6 ***	0.0	0.0 *	-0.2 **	0.0
Intercept	286.1 ***	291.3 ***	166.9 ***	136.0 ***	2.3 *	1.7	20.6 ***	15.1 ***
N	2,027	2,054	2,027	2,054	2,027	2,054	2,027	2,054

Source: Authors' calculations from the 2003 and 2004 American Time Use Survey.
***p-value < .001, **p-value < .01, *p-value < .05.

Table A4. OLS Regression Estimates of Mothers' and Fathers' Daily Minutes in Selected Childcare Activites: 2003-2004 [A]

	Educational Activites for Children		Help with Homework		At Home between 3:00 and 6:00 p.m.	
	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers
Nonstandard workday diary	**-5.4** *	**-3.3**	**-2.9**	**-1.8**	**6.5** *	**-2.7**
Age (35-44 omitted)						
18-34	3.5	-3.4	3.4 *	-0.3	-2.9	-15.1 ***
45-64	-1.2	-1.6	-0.3	-0.8	-5.6	-0.4
White	0.4	2.1	-3.6 *	-0.8	-0.6	-0.7
Family Characteristics						
Married	0.3	-2.9	1.2	-2.6	11.3 ***	-1.9
Number of children	3.7 ***	2.7 *	1.8 *	1.2	2.7	0.2
Preschooler present	-7.0 **	-3.5	-3.6	0.0	-5.5 *	7.2 *
Education (High School Only omitted)						
Some college	1.1	-0.3	0.2	-1.5	-10.3 **	-9.5 **
College graduate	11.0 ***	3.1	5.8 ***	0.7	-13.2 ***	-18.3 ***
Diary work hours	-1.2 ***	-1.2 ***	-0.4	-0.4	-9.7 ***	-9.1 ***
Summer diary	-6.7 ***	-7.3 ***	-7.5 ***	-5.3 ***	-3.3	-3.0
Number of activities	0.4 ***	0.1	0.2 ***	0.1	-0.7 ***	-0.7 ***
Intercept	5.7	18.7 **	4.9	9.8 *	146.8 ***	158.0 ***
N	1,630	1,524	1,630	1,524	1,630	1,524

Source: Authors' calculations from the 2003 and 2004 American Time Use Survey.
***p-value < .001, **p-value < .01, *p-value < .05.

[A]Sample restricted to parents with at least a school-aged child in the household.

Table A5. OLS Regression Estimates of Mothers' and Fathers' Daily Minutes of Any Time with Spouses and Time Alone with Spouses: 2003-2004[A]

	Any Time with Spouse		Time Alone with Spouse	
	Mothers	Fathers	Mothers	Fathers
Nonstandard workday diary	**-48.4** ***	**-34.9** ***	**-15.9** *	**-9.4**
Age (35-44 omitted)				
18-34	2.8	26.1 ***	-1.0	1.0
45-64	1.5	-11.4	6.2	-3.5
White	26.6 **	16.9 *	-0.6	3.5
Family Characteristics				
Married				
Number of children	-4.6	1.4	-7.9 **	2.0
Preschooler present	8.2	1.2	-10.2 *	-20.4 ***
Education (High School Only omitted)				
Some college	-0.6	1.5	6.9	10.0 *
College graduate	11.3	17.2 **	-2.5	13.6 **
Diary work hours	-14.0 ***	-20.8 ***	-4.3 ***	-7.7 ***
Summer diary	4.5	-7.6	9.9 *	-3.6
Number of activities	-2.0 ***	-0.4	-0.1	0.3
Intercept	278.5 ***	341.1 ***	107.9 ***	123.9 ***
N	1,349	1,876	1,349	1,876

Source: Authors' calculations from the 2003 and 2004 American Time Use Survey.
***p-value < .001, **p-value < .01, *p-value < .05.

[A]Sample restricted to married respondents.

Table A6. OLS Regression Estimates of Mothers' and Fathers' Daily Minutes of Sleep and Discretionary Time: Fitness, Watching Television, and Active Leisure: 2003-2004

	Sleep		Fitness		Freetime		Watching TV	
	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers
Nonstandard workday diary	**-20.6** ***	**-18.5** **	**3.3** *	**1.1**	**-21.6** **	**-5.3**	**-23.3** ***	**-24.3** ***
Age (35-44 omitted)								
18-34	4.0	-1.7	-4.0 **	0.4	14.2 *	4.6	18.0 ***	-0.5
45-64	-11.8 *	-1.2	-2.8	0.9	4.5	3.0	-2.0	-2.6
White	-7.7	22.9 ***	5.1 ***	-1.5	0.6	-20.4 **	-4.0	-12.9 *
Family Characteristics								
Married	-9.2 *	-0.5	-0.6	-1.4	-15.8 **	-3.3	-7.8	-8.0
Number of children	-10.6 ***	3.5	1.2	-0.4	-3.3	-5.6 *	-6.0 **	-7.8 ***
Preschooler present	8.8	-1.1	-2.7 *	-3.7	-45.0 ***	-16.6 **	-21.1 ***	3.6
Education (High School Only omitted)								
Some college	-4.9	-5.0	-0.3	2.2	-0.4	-5.9	-7.6	-11.2 *
College graduate	-8.0	-11.2 *	3.7 **	12.8 ***	-2.1	-9.9 *	-18.5 ***	-34.6 ***
Diary work hours	-15.2 ***	-14.8 ***	-1.0 ***	-2.3 ***	-18.6 ***	-24.0 ***	-8.9 ***	-10.7 ***
Summer diary	2.5	-4.8	2.9 *	3.2	1.7	-0.7	-7.7	-11.0 *
Number of activities	-3.7 ***	-4.8 ***	0.0	0.1 **	-0.9 **	0.1	-1.4 ***	-1.6 ***
Intercept	699.4 ***	663.8 ***	10.8 **	30.2 ***	368.7 ***	450.5 ***	214.3 ***	275.9 ***
N	2,027	2,054	2,027	2,054	2,027	2,054	2,027	2,054

Source: Authors' calculations from the 2003 and 2004 American Time Use Survey.
***p-value < .001, **p-value < .01, *p-value < .05.

Table A7. Number of Parents Left-Censored on Measures of Time with Children, Time with a Spouse, and Personal Care and Discretionary Time: 2003-2004

	Total Number Censored	
	Mothers	**Fathers**
Mothers		
Total Paid Work	0	0
Time with Children		
Any Time with Children	125	259
Any Time Alone with Children	278	805
Primary Childcare	386	833
Routine Childcare	486	1,014
Engaged Childcare	1,157	1,413
Reading to Children	1,823	1,933
Eating Breakfast with Children	1,787	1,844
Eating Dinner with Children	999	1,033
Education-related Childcare[A]	1,229	1,302
Helping with Homework[A]	1,315	1,365
At Home between 3-6pm[A]	517	615
Time with Spouse		
Any Time with Spouse[B]	193	235
Time with Spouse Only[B]	535	748
Personal Care and Discretionary Time		
Sleep	3	3
Fitness	1,751	1,725
Freetime	109	122
Watching TV	632	561
N	2,027	2,054

Note. Sample restricted to employed mothers and fathers with a weekday, workday diary.

[A]Sample restricted to mothers or fathers with children age 6 or older. (Total N=1630: 184 mothers with a nonstandard workday diary and 1,446 with a standard workday diary. / Total N=1,876: 186 fathers with a nonstandard workday diary and 1,338 with a standard workday diary.)

[B]Sample restricted to married mothers or married fathers (Total N =1,349: 173 married mothers with a nonstandard workday diary and 1,176 with a standard workday diary. / Total N =1,349: 247 married fathers with a nonstandard workday diary and 1,629 with a standard workday diary.)

***p-value < .001, **p-value < .01, *p-value < .05.